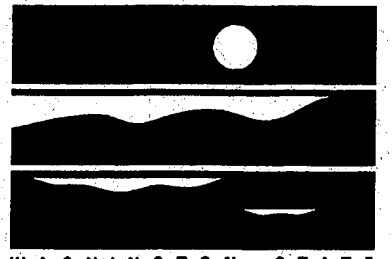

Reducing Hazardous Waste and Hazardous Substances in Washington

1995 Annual Progress Report

Washington State Department of Ecology
Hazardous Waste and Toxics Reduction Program
February, 1997
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Reduce Waste

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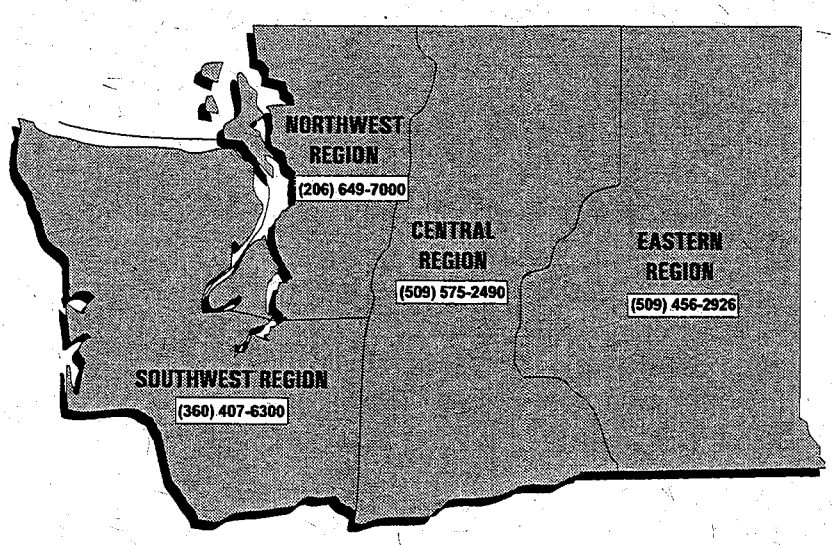
The Hazardous Waste and Toxics Reduction Program is responsible for the management and reduction of hazardous waste and toxic substances in Washington State. We are available to answer your questions. Contact your nearest regional office and ask for a Toxics Reduction Specialist for information on reducing or recycling hazardous waste. And if you are uncertain about your responsibilities as a hazardous waste generator, ask for a Hazardous Waste Specialist.



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Chapter 1 — Introduction

Purpose of the Report

This annual report provides information on the progress being made in reducing hazardous wastes and hazardous substances in Washington. The report is intended to update the appropriate legislative environmental standing committees and other interested parties on progress being made in implementing the Hazardous Waste Reduction Act, Chapter 70.95C RCW. The report covers progress during calendar year 1995.

Program Overview

The 1990 Hazardous Waste Reduction Act established a goal to reduce hazardous waste generation by 50%. The primary means for achieving this goal is through implementation of a pollution prevention planning program, also established in the Act. Facilities that generate over 2,640 pounds of hazardous waste per year, or who are required to report under the Toxic Release Inventory (TRI) of Title III of the Superfund Amendments and Reauthorization Act (SARA), are subject to this law. Some 650 facilities in Washington currently participate in this planning program.

Pollution prevention planning is an activity that involves:

- ✔ inventorying hazardous substances used and hazardous waste generated;
- ✔ identifying opportunities to prevent pollution;
- ✔ analyzing the feasibility of these prevention opportunities; and
- ✔ setting goals for hazardous substance use reduction and hazardous waste reduction, recycling and treatment.

Ecology promotes pollution prevention through initiatives other than planning. Several campaigns targeting specific industries have been conducted and more are being planned. These campaigns have a joint focus of pollution prevention and regulatory compliance, and help target future technical assistance. For instance, Ecology has just concluded the *Snapshots* campaign focused on the printing and photoprocessing industries. A summary of the campaign's results can be found on page 6. A campaign known as *School Sweeps* is currently underway. Ecology and the Local Hazardous Waste Management Program of King County have teamed up to work with all the state community and technical colleges in an educational campaign to improve regulatory compliance and pollution prevention at school facilities. The campaign includes on-site evaluation visits to all schools, and development of industry-specific environmental curriculums to be taught to all students.

Pollution prevention has emerged as a key strategy for protecting the environment. Business, industry and government alike recognize the benefits of prevention rather than end-of-pipe controls. Many factors, including regulatory compliance, cost savings, worker safety and reduced liabilities help validate pollution prevention as an approach to be incorporated into all business practices.

Johnson Matthey Electronics in Spokane is a large manufacturer of specialty materials for the electronics industry. During initial site visits, JME planned to build and operate a continuous wastewater treatment system, with a capital cost of several hundred thousand dollars. Ecology staff proposed a comprehensive water conservation program, which precluded the need for the continuous system. This is saving the company all of the capital costs plus over a hundred thousand dollars per year in operations expense.

Chapter 2 — Measuring Pollution Prevention Progress

Progress Toward the 50% Policy Goal

The Hazardous Waste Reduction Act contains a statewide policy goal to reduce hazardous waste generation by 50%. The goal equals 128 million pounds, which is 50% of the 255 million pounds generated by all facilities in 1990. Annual Dangerous Waste Reports, filed by all generators, are used to view waste management trends over time. Generation trends, particularly when adjusted for changing economic conditions, provide a measurement of progress toward the 50% goal.

Figure 1 charts hazardous waste generation levels for 1990 through 1995. The amounts shown are from all generating facilities except commercial treatment, storage and disposal facilities, which manage wastes generated by others. Most waste waters, wastes from clean-up projects and mixed radioactive wastes are also excluded.

The graph in Figure 1 also shows the data adjusted for the changing economy. The adjustments are intended to show estimated levels of waste generation assuming the economy remained constant. This process, called "normalizing" data, makes waste totals more comparable from year to year. The adjustment factors were calculated from information provided by the Department of Revenue. Gross business income from all Washington businesses was the normalization measure used.

The normalized data show a generation level of 191 million pounds in 1995, compared to 289 million pounds in 1992. 1992 is the year of highest waste generation and the first year facilities were required to conduct pollution prevention planning. Comparing waste in 1995 to 1992 equates to a significant 34% reduction.

Figure 1 also shows a projected generation level in the year 2000 (160 million pounds) that will occur if the waste reduction targets of the facilities submitting pollution prevention plans through 1995 (95 million pounds) are met. When compared to non-normalized 1992 data, this achievement would equate to a 49% reduction. Compared to the base year of 1990, this would equate to a 37% reduction.

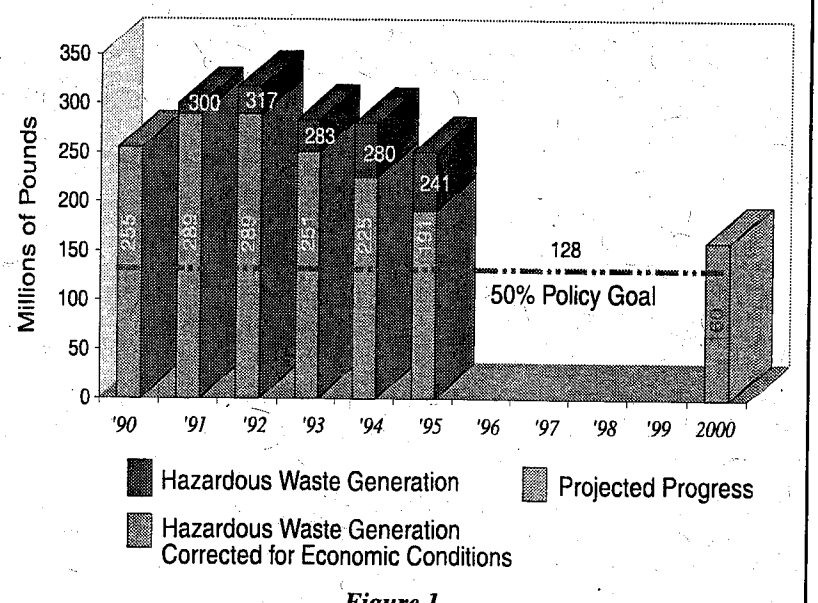

Figure 1
Progress Toward the 50% Waste Reduction Goal

Progress Toward Planning Targets (Goals)

Another way to measure progress is to look at the information provided by facilities required to prepare pollution prevention plans. Facilities are asked to establish numerical targets for hazardous substance use reduction and hazardous waste reduction, and for the amounts of waste that will be recycled and treated. These targets are determined by estimating the effects of implementing pollution prevention projects identified as part of the planning process.

Figure 2 displays the most current targets for 482 facilities submitting plans and Annual Progress Reports from 1992 through 1995.

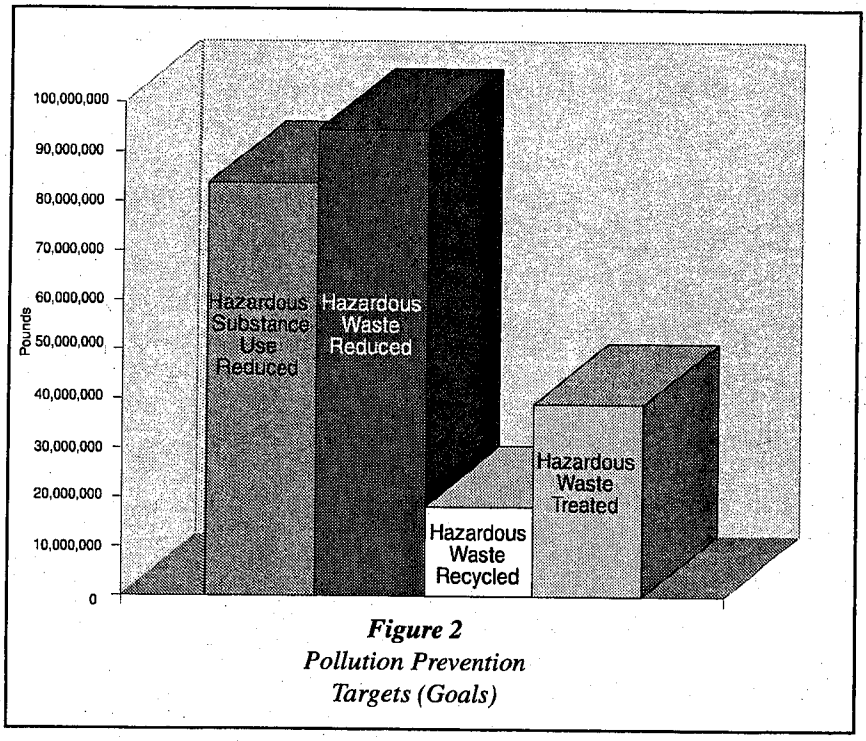

Figure 2
Pollution Prevention Targets (Goals)

Since 1992, Burlington Northern Santa Fe (BNSF) reduced hazardous waste by 75% and associated costs by 63% at their Interbay facility. Seattle's Interbay is BNSF's largest maintenance shop in the Pacific Northwest, and services about one-fifth of BNSFs national locomotive fleet. Interbay operates 24 hours a day, seven days a week and employs more than 300 people in 5 different departments. The employees at Interbay realized significant waste reductions and safety improvements by incorporating best management practices into their work environment. A BNSF best management practices to "reduce/reuse/recycle" lead to the recycling of 281,000 gallons of used oil each year, fluorescent and high intensity discharge lamps, and the metal shavings from wheel truing. What is really impressive is that these reductions in waste occurred while BNSF experienced a forty percent increase in vehicles serviced.

Other Measures of Progress

Pollution prevention progress needs to be assessed by looking at reductions in all environmental media using a variety of data sources. The trend information displayed in this report that was obtained from Dangerous Waste Annual Reports is a key source, but it can be supplemented from other reporting mechanisms. Data collected from the Toxic Release Inventory (TRI), for example, provides estimates of chemical releases to air, land and water. Viewing these releases over time provides worthwhile observations about statewide trends.

Additional insights into waste management practices surface as Ecology works with specific industry sectors. Focused technical assistance efforts for these sectors provide the opportunity to collect information on how improved management practices can reduce environmental impacts.

Trends in Statewide Toxic Releases

Ecology recently compiled the data submitted by manufacturing facilities on their 1995 Toxic Release Inventory (TRI) reports. The reports cover 108 chemicals that exceeded reporting thresholds in Washington during 1995 (out of over 600 chemicals identified by EPA as "toxic"), and provide estimated amounts of releases and where they occurred (i.e. air, land or water), plus amounts transferred off-site.

During initial site visits, Rainier Ballistics in Tacoma was transporting two tanker trucks full of hazardous process waste off-site per month. Ecology staff worked with Rainier Ballistics technical staff in implementing pollution prevention techniques such as evaporative concentration and rinsewater management. This reduced the amount of waste moved off-site by two orders of magnitude, resulting in savings in excess of $100,000 per year. Continuing efforts in waste reduction via electrolytic recovery will render some of the remaining waste into recovered copper metal for use in-process or for sale.

Figure 4 displays the total releases reported for all chemicals for 1995. The totals have not been adjusted for changing reporting requirements, even though they have changed quite dramatically from year to year. Some examples of this are:

- Acetone was removed from the chemical list in 1994, but releases for acetone are included for the years prior to 1994.
- The way sulfuric acid, hydrochloric acid, and ammonia are now reported has change significantly.
- Two hundred eighty-six new chemicals were added to the list of reportable chemicals in 1995. Releases for these new chemicals are included for 1995, but not for previous years.
- A change in factors that the pulp and paper industry uses to calculate their methanol releases has resulted in a significant increase in the amount of methanol reported released in 1994 and 1995.

All of these changes impact the total releases reported for a given year, making it difficult to compare data over time. A continuing trend of decreasing releases since 1990 remains intact when the data is adjusted for changing reporting requirements.

Ecology is preparing a *Washington State Toxic Release Inventory, 1995 Summary Report*, which should be available by April, 1997. Interested parties may request Publication #97-405 from the Department of Ecology.

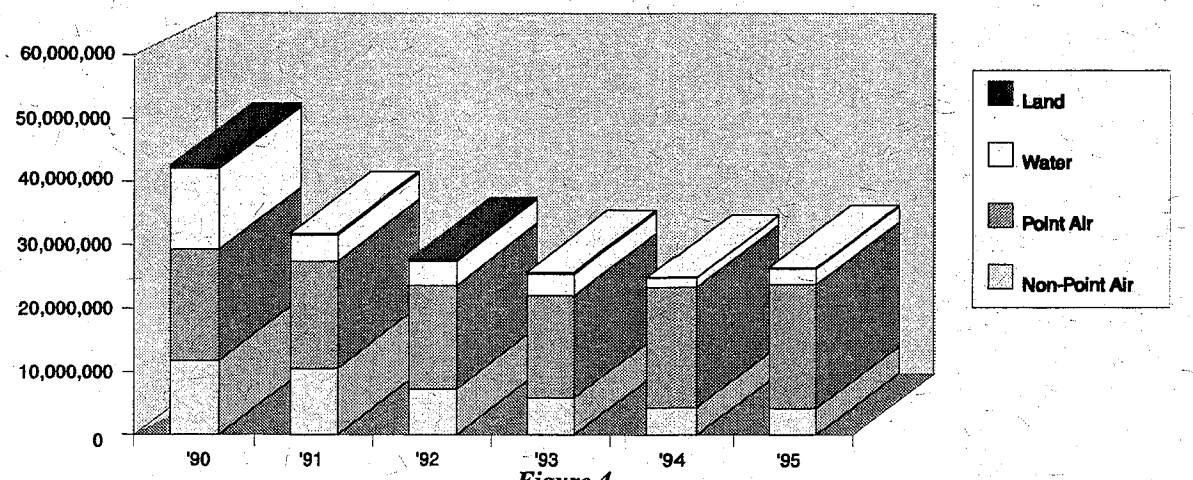

Figure 4
Washington Toxics Chemical Releases By Environmental Media 1990 - 1995

Snapshots Campaign

Ecology began an industry-specific campaign known as *Snapshots* in 1994 and completed it in 1995. *Snapshots* focused on technical assistance to lithographic printers, screen printers, and photo processors. Ecology and local county staff worked together to visit a total of 1,314 shops. These visits provided short, focused, site-specific recommendations to reduce waste generation, improve waste management and help shops achieve compliance with hazardous waste regulations.

The major waste management concerns encountered during *Snapshots* visits centered on: spent photographic fixer, waste ink, shop towels, electrostatic plate solution, waste paper and film containers. The initial findings during the visits were that:

- ✔ 60% of the photo processing shops and 41% of the lithography shops were properly managing their spent fixer.
- ✔ 85% of the lithography shops and 47% of the screen print shops were using proper management for their used shop towels.
- ✔ 41% percent of the lithography shops were properly managing their waste ink and 24% were properly managing their waste electrostatic plate solutions.

Follow up assistance was provided, with a major focus on shops with significant waste management concerns. Eighty percent of the shops receiving follow up visits were found to have resolved their most serious issues between the time of the original visit and the follow up visit. Interested parties may obtain the full ***Snapshots Campaign Summary Report*** by requesting Publication #96-410 from the Department of Ecology.

Shell Oil's Anacortes Refining Company recently replaced and modernized a reactor unit in their Anacortes refinery's butane isomerization plant, eliminating the use of an antimony metal catalyst and hydrochloric acid. This change reduced the refinery's annual use of hazardous substances by 10,000 pounds, and reduced annual releases and transfers of antimony compounds by 80%, or 24,000 pounds from 1994 levels. The new unit uses a platinum catalyst which is recycled. The process change also significantly reduces the volume of wastewater treatment sludges generated by the refinery. Butane isomerization is one step in the production of gasoline from the butane contained in crude oil and produced in other refinery processes. The company's decision to replace this process unit was based on improved profitability, reliability, worker safety, and protection of the community and environment.

Chapter 3 — Program Improvements

During 1995, Ecology initiated studies to assess the effectiveness of the pollution prevention planning and reporting requirements. The studies were completed in 1996, and steps taken to implement the findings.

One result of the evaluation of the planning program was the decision to revise the planning guidance manual. The revision, which has just been completed, was primarily directed toward a clearer expression of the purpose of planning, how to do it, and how each step of the planning process provides value to the facility. The revised manual includes specific guidance for preparing five-year plan updates, which are first due in September, 1997.

Another project that resulted from the evaluation was the development of an Environmental Management System (EMS) alternative to the traditional approach to pollution prevention planning. Ecology recognizes that some facilities have achieved the integration of pollution prevention into overall business management through adoption and implementation of an EMS. Ecology expects that companies using an EMS will achieve superior environmental results since these systems routinely assess environmental impacts of a business' operation and identify ways to improve environmental performance. This is the first time that Ecology has allowed an EMS to substitute for a prescriptive requirement.

Requirements for reporting pollution prevention progress were also evaluated. This included a major focus on data needs—what data should be collected, how it should be collected, and how should it be used. As a result of this evaluation, reporting requirements were substantially simplified. The guidance documents for preparing Annual Progress Reports was revised accordingly.

Magna Design, an office furniture manufacturer, reduced waste generation from 3,520 pounds to 1,369 pounds within three years. In turn, Magna Design is no longer required to do pollution prevention planning. Most of its pollution prevention efforts focused on the use of stains, sealers and top coats. This reduction the facility has achieved is the direct result of employee involvement and changes made to the panel cleaning process. Employees are taking great care to ensure that just enough material is used to do the job — no more, no less. Thinner dispensers and edgebanders were updated to use less thinner. In addition, Magna Design has moved from using thinner to using a less volatile citrus based solvent to clean the panels.

Chapter 4 — Challenges Ahead

Since its inception, the Pollution Prevention Program provided for in the Hazardous Waste Reduction Act has gone through several stages of development, implementation, refinement, evaluation, and improvement. It's a program that has documented many successes. There remains, however, much more work to do in terms of reducing hazardous substance use and hazardous waste generation.

Businesses have a continuing need for help as they explore and implement ways to reduce wastes. Ecology receives many requests for technical assistance. The help provided to facilities saves them significant amounts of money each year, increases their regulatory compliance rates, and decreases their liabilities. Some examples of the types of requests for technical assistance received include:

- ❖ Help conduct reviews of hazardous substance use and hazardous waste generation.
- ❖ Help overcome technical, economic and regulatory barriers to implementing. pollution prevention projects.
- ❖ Help businesses safely manage hazardous waste that is generated.
- ❖ Resolve waste oil, automotive fluids issues.
- ❖ Help set up purchasing/inventory/materials tracking systems.
- ❖ Assist with cost analysis of pollution prevention opportunities—tools/methodologies.
- ❖ Share ideas and techniques for solvent reduction/substitution/ alternatives.

During 1995, this type of assistance was provided in several ways:

- ✔ 335 site visits to planners and non-planners
- ✔ 4,863 phone consultations to planners and non-planners
- ✔ 35 workshops, attended by 2,298 participants
- ✔ regular distribution of newsletters and other publications

Economic development in Washington State means more business activity in the state—new and expanding business. This can mean increasing hazardous waste generation which is why attention to pollution prevention is so important. Each year, new facilities are identified as pollution prevention planners and ask for plan preparation assistance. An average of 60 facilities have been added to the "planning universe" each of the last three years, bringing the total number of planners to 650. Assisting businesses prepare new plans coupled with helping business update those plans point to a busy 1997—and the years beyond.